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Family Coryphaenidae

Body elongate, greatly compressed, more or less fusiform in young, deeper just behind head with age. Head moderate, compressed. Snout compressed. Eye advanced, small. Mouth large, lower jaw projecting. Maxillary reaches below eye. Teeth conic, small, in bands in jaws, on palate and tongue. Nostrils together. Interorbital elevated, greatly so in adult male. Gill membranes free from isthmus. Gill rakers lanceolate. No pseudobranchiae. Branchiostegals 7. No air bladder. Vertebrae 30 to 33. Pyloric appendages very numerous. Body covered with very small scales. Lateral line

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complete, axial on side. Dorsal single, many rayed, extends along back from nape to caudal fin and not greatly elevated. Anal similar, much shorter, without spines. Caudal widely forked. Pectoral short, falcate. Ventral thoracic.

Large fishes of the high seas in warm regions, noted for their brilliant and changeable colors.

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Genus Coryphaena Linnaeus

Coryphaena Linnaeus, Syst. Nat.,
ed. 10, pt. 1, p. 261, 1758. (Type
Coryphaena hippurus Linnaeus,
designated by Jordan and Gilbert,
Bull. U. S. Nat. Mus., No. 16, p. 454,
1882.)

Coryphaene Forster, Cat. Animals
North America, p. 20, 1771. (Type
Coryphaena hippurus Linnaeus.)

Hippurus Klein, Gesell. Schauplatz,
vol. 7, p. 788, 1779. (Type Coryphaena
hippurus Linnaeus, tautotypic.)
(Inadmissible.)

Depth $3\frac{4}{5}$ to 4; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $2\frac{1}{8}$ to $2\frac{1}{5}$. Snout $2\frac{2}{3}$ to 3 in head; eye $3\frac{7}{8}$ to $4\frac{1}{4}$, $1\frac{1}{3}$ to $1\frac{7}{8}$ in snout, $1\frac{1}{5}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches to or $\frac{1}{5}$ in eye, expansion $1\frac{2}{5}$ to $1\frac{3}{4}$ in eye, length $2\frac{2}{5}$ to $2\frac{1}{2}$ in head; barbels $1\frac{2}{3}$ to $1\frac{3}{4}$, not quite reaching opposite hind preopercle edge; teeth in villiform bands in jaws and on palatines; interorbital $3\frac{7}{8}$ to 4, slightly depressed medially. Gill rakers 8+20, lanceolate, $1\frac{1}{5}$ in gill filaments, which $1\frac{1}{4}$ in eye; 4 lowest as rudiments.

Scales 34 or 35 in lateral line to caudal base and 3 more on latter; 3 above, 7 below, 17 predorsal ~~above~~ forward above front nostril, 3 rows on cheeks with rather broad naked flange. Scales with 5 or 6 basal radiating striae; 85 to 100 short apical denticles.

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Caranx omorus Lacépède, Hist. nat. Poiss., vol. 3, p. 82, 1802. (Type Scomber pelagicus Linnaeus), designated Jordan and Evermann, Genera of Fishes, pt. 1, p. 61, 1917.)

Coryphus Commerson) Lacépède, Hist. nat. Poiss., vol. 3, p. 186, 1802. (Type Coryphaena hippurus Linnaeus, monotypic.) (Inadmissible.)

Lepimphus Rafinesque, Car. nuov. Animal. Sicil., p. 33, 1810. (Type Lepimphus hippuroides Rafinesque), designated by Jordan and Evermann, Genera of Fishes, pt. 1, p. 79, 1917.)

Lamprugus Cuvier, Hist. nat. Poiss., vol. 9, p. 317, 1833. (Type Scomber pelagicus Linnaeus), designated by Jordan and Evermann, Genera of Fishes, pt. 1, p. 143, 1917.)

Upeneus notacensis Bleeker, Nederl.
Tijdschr. Dierk., vol. 1, 1865, p. 281
(reference); vol. 4, 1874, p. 118 (China);
Verhandel. Kon. Akad. Wetensch.
Amsterdam, vol. 15, no. 3, 1875, p. 8
(Celebes, Sumbawa, Amboina);
Atlas Ichth. Ind. Néerland., vol. 9,
1877, pl. (2) 392, fig. 1.

Upeneus dubius (part) Schlegel,
Fauna Japonica, Poiss., pts. 2-4, 1843,
pl. 11, fig. 3.

Upeneoides dubius Kner, Reise Novara,
Fische, 1865, p. 67 (Australia).

Upeneoides fasciatus Day, Proc.
Zool. Soc. London, 1868, p. 151. Madras.

Upeneoides sulphureus (not Cuvier) Day,
Fishes of India, pt. 1, 1876, p. 120 (part).

? Upeneoides roseus Castelnau, (Res. Fishes
Australia) Victorian Office Rec. Phila-
delphia Exhib., 1875, p. 11. Cape York. ⁱⁿ
Macleay, Proc. Linn. Soc. New South Wales, vol.
5, 1881, p. 403 (Cape York).

Etenias Jordan and Thompson,
Mem. Carnegie Mus., vol. 6, no. 4,
p. 241, ^{sep.} 1914. (Type Etenias
brunneus Jordan and Thompson,
orthotypic.)

Upenoides moluccensis Herre and
Montalban, Philippine Journ. Sci., vol.
36, no. 1, May 1928, p. 101 (Manila,
Balayan Bay, Pinamalayan, Tagbilaran,
Larena; Hong Kong) (error).

Body more or less fusiform in young, becomes deeper just behind head in adult, forms elevated crest on skull. Head well compressed, rather attenuated in young, front profile nearly vertical in adult male. Snout little wider than long. Eye slightly elongate. Mouth cleft wide, slightly curved and inclined. Villiform teeth in jaws, on vomer and palatines, also on tongue. Interorbital convexly elevated. Lower gill rakers 9 or 10. Scales minute, imbedded. Head naked, except cheeks, postocular and temporal regions. Lateral line little curved or wavy at first. Dorsal begins on head over eye, slightly

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elevated in front, long, extends
back on caudal peduncle.
Anal similar, much shorter.
No distinct dorsal or anal
spines. Caudal long, deeply
forked. Pectoral falcate.
Ventral well developed, received
in groove in abdomen.

Fishes of the high seas
in temperate and tropical
regions. Of the many nominal
species described, most all are
really to be referred to two.

Analysis of Species

a.¹ Eye $3\frac{1}{2}$ to 4 in supraorbital space; dl. 58 to 30. hippurus.

a.² Eye $2\frac{1}{2}$ in supraorbital space; dl. 53 to 58. equiselis.

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anal dusky, posteriorly pale.
Pectoral whitish. Ventral blackish.

Only known from the type.

51946 U. S. N. M. Negros Island.

Dr. Bashford Dean. Length 18 mm.

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Coryphaena hippurus Linnaeus

Coryphaena hippurus Linnaeus, Syst.
Nat., ed. 10, pt. 1, p. 261, 1758 (type
locality, Pelagic in open seas). —
Osbeck, Reise Ost Ind. China,
p. 365, 1765 (Java), p. 403 ("der
Grasse") — Linnaeus, Syst. Nat.,
ed. 12, pt. 1, p. 446, 1766 (copied). —
— Forsk., Descript. Animal.,
p. XIX, 1775 (Malta). — Bloch,
Naturges. Ausland. Fische, vol. 2,
p. 143, pl. 174, 1786 (no locality). —
Bonnaterre, Tabl. Ichth., p. 59,
pl. 33, fig. 125, 1788 (the Ocean).
— Gmelin, Syst. Nat. Linnaeus,
vol. 1, p. 1189, 1789 (Mediterranean;
the Ocean). — Walbaum, Arted.

6 or 7 transverse series of basal elements; circuli fine.

D. X — I, 26, I, second spine prolonged filament equal to $1\frac{4}{5}$ in entire length of specimen, first branched ray $2\frac{1}{2}$ in head; A. II, 25, I, ^{second} first branched ray $3\frac{1}{5}$; caudal $1\frac{2}{3}$, slightly emarginate behind; least depth of caudal peduncle $4\frac{4}{5}$; pectoral $1\frac{2}{3}$; ventral $2\frac{3}{5}$.

Upper half of body ^{light} brown, lower half paler to whitish. Iris silvery white. Fins pale brownish.

11668 A.N.S.P. East Indies, Dr. H.C. Wood. Length 195 mm.

Pisc., vol. 3, p. 97, 1792 (copied).

— Blumenbach, Handb. Naturg.,
p. 272, 1799. — Lacépède, Hist.
Nat. Poiss., vol. 3, pp. 172, 178,
1802 (all seas).

— Shaw and Nodder, Natural
Miscellany, vol. 7, pl. 242, 1796
(Mediterranean).

— Valenciennes, Hist. Nat. Poiss.,
vol. 9, p. 278, pl. 266, 1833 (Syracuse).

— Lichtenstein, Descript. Animal.
Forster, p. 155, 1844 (tropical Pacific).

— Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 405, 1860 (Cape Seas; Mauritius;
Madeira). — Playfair, Fishes of

Zanzibar, p. 66, 1866 (Zanzibar).

— Steindachner, Sitzb. Ber. Akad.
Wiss. Wien, math.-naturw. Kl., vol. 57,
Pt. 1, p. 370, 1868 (Santa Cruz de Tenerife;
Lagos; Malaga).

Monoprion Poey, Mem. Hist. Nat. Cuba,
vol. 2, 1860, p. 123. Type Monoprion

maculatus Poey, monotypic.

Lepidamia Gill, Proc. Acad. Nat.

Sci. Philad., 1863, p. 81. Type Amia

kalosoma Bleeker, monotypic.

Pristiapogon Klunzinger, Verh. zool. bot.

Gesell. Wien, 1870, p. 715. Type Apogon

fenatus Valenciennes, monotypic.

Vincentia Castelnau, Proc. Zool. Acclim.

Soc. Victoria, vol. 1, 1872, p. 245. Type

Vincentia waterhousei Castelnau, monotypic.

Monosira Poey, Anales Soc. Españ. Hist. Nat.

Madrid, vol. 10, 1881, p. 326. Type Monosira

stahli Poey.

Fowleria Jordan and Evermann, Bull. U. S. Fish

Comm., vol. 23, pt. 1, 1903 (1905), p. 201.

Type Fowleria brachygrammus Jenkins,

orthotypic.

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— Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 21, p. 446, 1871 (Red Sea).

— Bleeker, Rech. Madagascar Pollen et van Dam, pt. 4, p. 97, 1875 (reference).

— Day, Fishes of India, pt. 2, p. 248, pl. 53, fig. 6, 1876 (Madras). — Steindachner and Döderlein, Denks. Akad. Wiss. Wien, math.-naturw. Kl., vol. 47, p. , 1883.

— Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 18 (Maurice), p. 18, 1879 (reference); (Enum. Poiss. Japon), p. 16, 1879.

— Klunzinger, Fische Roth. Meer., vol. 1, p. 117, 1884. — Meyer, Anal. Soc. Españ. Hist. Nat. Madrid, vol. 14, p. 27, 1885 (Macassar).

— Hystrom, Bih. Kon. Svensk. Vet. Akad. Handl. Stockholm, vol. 13, afd. 4, no. 4, p. 30, 1887 (Nagasaki). — Günther, Rep. Voy. Challenger, vol. 3, pt. 2, p. 7, 1888 (1889) (Loo-Chipelago). — Day, Fauna British India, Fishes, vol. 2, p. 200, fig. 69, 1889.

Only known from the type.

No. 70251, E. S. S. M. Rasa Island,
Montaguin Island, Palawan. April 1,
1909. Length 37 mm.

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— Goode and Bean, Oceanic Ichth., p.
209, 1895 (reference).

— Jordan and Snyder, Proc. U.S. Nat.
Mus., vol. 23, p. 353, 1900 (Tokyo);
Annot. Zool. Japon., vol. 3, p. 68, 1901
(reference).

— Jenkins, Bull. U.S. Fish Comm., vol. 22,
p. 447, 1902 (1904) (Honolulu). — Jordan
and Evermann, Bull. U.S. Fish Comm.,
vol. 23, pt. 1, p. 204, 1903 (1905) (Honolulu;
Hilo). — Snodgrass and Heller, Proc.
Washington Acad. Sci., vol. 6, p. 365, Jan.
31, 1906 (between Revillagigedo and
Clipperton; Cocos Island; Clarion Island).

— Kendall and Radcliffe, Mem. Mus. Comp. Zool., vol. 25, no. 3, p. 101, April 1912 (Lat. $9^{\circ}7'N$, long. $85^{\circ}11'W$). — Weber, Siboga Exped., vol. 57, Fische, p. 409, 1913 (Macassar).

— Fowler, Copeia, no. 112, p. 82, Nov. 29, 1922 (Hawaii). — Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, p. 35, Dec. 1922 (Honolulu).

— Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 566, pl. 26, fig. 1, Oct. 1927 (Cape Fear; Table Bay; False Bay). — Fowler, Mem. Bishop Mus., vol. 10, p. 137, fig. 30 (young), 1928 (Honolulu).

— McCulloch, Austral. Mus. Mem.,
 No. 5, pt. 2, p. 194, Sep. 10, 1929 (reference).
 — Fowler, Mem. Bishop Mus., vol. 10,
 No. 5, p. 225, 1931 (Honolulu).

— McCulloch, Fishes of New South Wales,
 ed. 3, p. 54, pl. 23, fig. 196a, 1934.

Depth $2\frac{1}{5}$; head $2\frac{2}{5}$, width $2\frac{1}{2}$.

Snout $5\frac{1}{5}$ in head from snout tip; eye 4, much greater than snout or interorbital; maxillary reaches slightly beyond eye, expansion $1\frac{1}{2}$ in eye, length 2 in head; teeth very minute, villiform, in bands in jaws and on vomer, obsolete or absent from palatines; interorbital $5\frac{1}{4}$, but very slightly convex; preopercle with entire ridge and edge. Gill rakers $3 + 11$, lanceolate, little longer than gill filaments or $2\frac{1}{2}$ in eye.

Scales 21 in lateral line to caudal base and 2 more on latter, 2 above, 8 below, 6 predorsal, at least row of large scales on cheek; head except cheeks and opercles

Coryphaena hippurus G. Bennett,
Gatherings Nat. Austral., p. 20,
 1860 (N. lat. $35^{\circ}15' S.$, long. $25^{\circ}3' E.$).

(Swainson), Nat. Hist. Animals, vol. 2,
 p. 252, 1839 (reference).

Coryphaena hippurus hippurus
Aleranjagala, Ceylon Journ. Sci.,
 vol. 18, pt. 1, p. 58, pl. 4, Dec. 22,
 1933 (Ceylon).

to middle of side. Spinous dorsal buff basally and most membranes with dark brown terminally. Soft dorsal dark brown largely on outer half of fin as 3 or 4 longitudinal still darker bands. Anal with 5 or 6 irregular longitudinal dark brown bands. Caudal pale brown. Pectoral pale brown, darker above. Ventral grayish basally, terminally dark brown with 7 or 8 waved gray transverse bands, each edged with dark line.

This species, restricted to the Hawaiian sub-region, is very close to ^{Pseud}~~upeneus~~ ^{trifasciatus} ~~noana~~, but differs at once in the broad pale or yellowish area below the spinous dorsal.

Scomber pelagicus Linnaeus, Syst.
Nat., ed. 10, pt. 1, p. 299, 1758 (no
 type locality). — Bonnaterre, Tabl.
Ichth., p. 141, f. 1788 (the Ocean). — Gmelin,
Syst. Nat. Linnaeus, pt. 1, p. 1336, 1789 (copied).

Caranx omorus pelagicus Lacépède,
Hist. Nat. Poiss., vol. 3, pp. ^{82, 83,} ~~26~~, 1802.
 ("en pleine mer").

Cyçhla pelagica Schneider, Syst. Ichth.
Bloch, p. 341, 1801 (copied).

Coryphaena pelagica Günther, Cat.
Fish. Brit. Mus., vol. 2, p. 407, 1860
 (reference).

back. Rose of flanks contrasted with white of abdomen. Large triangular red blotch at caudal base, somewhat dull like back. First dorsal reddish and marked obliquely with 3 brownish bands; first ray dusky; second dorsal fuler, oblique bands deeper or bister, mottled with reddish. Caudal dull red, each lobe with 6 parallel longitudinal streaks, blackish at tip and reddish at base of fin. Barbels rosy basally, citren yellow terminally. Length 225 to 250 mm.

Coryphaena fasciolata Pallas,⁶⁶⁷
Spicil. Zool., vol. 8, pl. 3, fig. 2, 1770
(type locality, Amboyna). —
Bonnaterre, Tabl. Ichth., p. 60, pl.
34, fig. 129, 1788 (copied). —
Gmelin, Syst. Nat. Linnaeus, pt.
1, p. 1193, 1789 (copied). — Walbaum,
Artedi Pisc., vol. 3, p. 102, 1792
(copied). — Forster, Fauna Indica,
p. 14, 1795. — Schneider, Syst.
Ichth. Bloch, p. 297, 1801 (copied).

Lamprugus fasciolatus Valenciennes,
Hist. Nat. Poiss., vol. 9, p. 328, 1833
(copied). — Bleeker, Nat. Tijds.
Ned. Indië, vol. 21, p. (50, 54) 66, 1860
(Cape of Good Hope).

Genus Amia Gronow.

Amia Gronow, Zoophylac., 1763, p. 80.
Species non-binomial. Type Amia
moluccensis Valenciennes, designated by
Gill, Proc. Acad. Nat. Sci. Phila., 1862,
p. 237.

Apogon Lacépède, Hist. Nat. Poiss., vol. 3,
1802, p. 411. Type Apogon ruber Lacépède,
monotypic.

Astorhinchus Lacépède, Hist. ^{Nat. Poiss.} vol. 4, 1802, p.
23. Type Astorhinchus fleurieu Lacépède,
monotypic.

Dipterodon Lacépède, Hist. Nat. Poiss., vol.
4, 1802, p. 167. Type Dipterodon hexacanthus
Lacépède, designated by Jordan and Evermann,
Genera of Fishes, vol. 1, 1917, p. 63.

Macrolepis Rafinesque, Analyse de la
nature, 1815, p. 89. Type Apogon ruber
Lacépède. Macrolepis Rafinesque proposed
to replace Apogon Lacépède.

Coryphaena chrysurus Lacépède, Hist.
nat. Poiss., vol. ^{2,} ~~3,~~ ^{pl. 18,} ~~pp. 174, 187,~~ fig. 2, 1799;
vol. 3, pp. 174, 187, 1802 (type locality, Lat. 16° S.,
long. 170° W., Pacific Ocean, Great Equatorial Ocean).

— Cuvier, Hist. nat. Poiss., vol. 9, p. 309,
1833 (Pondicherry).

— Bleeker, Verh. Batavia. Genoot.
(hal. Ichth. Bengal), vol. 25, p. 46,
1853 (reference). — Guichenot, Notes Ile
Reunion, vol. 2, p. 26, 1862. — Jouan, Mém. Soc. Sci.
Cherbourg, ser. 2, vol. 5, p. 106, 1876 (Seychelles).

Coryphaena scomberoides Lacépède,
Hist. nat. Poiss., vol. 3, pp. 174, 192, 1802
(type locality, South Sea, lat. 18° S., long. 134° W.).

— Cuvier, Hist. nat. Poiss., vol. 9, p.
315, 1833 (type).

— Bleeker, Act. Soc. Sci. Ind.
Néerl., vol. 3, no. 4, p. 3, 1857-58
(Manado), p. 7 (Macassar).

— Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 407, 1860 (compiled).

spine weak.

Scales 38 in lateral line; 3 above, 7 below. Tubes in lateral line very arborescent posteriorly.

D. VII - I, 7, first spine highest and equals $\frac{2}{3}$ body depth, second subequal; A. 7; caudal deeply forked; pectoral equals first dorsal spine.

Back reddish, becoming white on abdomen. Large triangular reddish spot originally described not now apparent. First dorsal with 3 brownish longitudinal bands, second dorsal likewise banded. Caudal with 6 oblique streaks across either lobe. Length 305 mm. (Day.)

Ceylon, Hawaii. Cuvier describes its colors from Reynaud:

Back red, dulled with tinge of bistre. Head above deeper colored than

Coryphaena imperialis Rafinesque,
Car. & nuov. Animal. Sicil., p. 33,
1810 (type locality, Sicily).

Coryphaena immaculata Agassiz,
Pisc. Brasil. Spix, vol. 3, pl. 56,
1829 (type locality, Brazil).

Coryphaena azurea Lesson, Voy.
Cochille, Zool., pt. 2, p. 153, 1830
(type locality, lat. 23° S., long. 37° E.).

.. Valenciennes
Coryphaena marcgravi Cuvier,
Hist. nat. Poiss., vol. 9, p. 301, 1833
(type locality, Brazil) (on Marcgrave).

.. Valenciennes
Coryphaena sueurii Cuvier, Hist. nat.
Poiss., vol. 9, p. 302, 1833 (type locality,
not given [= New Jersey]).

.. Valenciennes
Coryphaena dorado Cuvier, Hist. nat.
Poiss., vol. 9, p. 303, 1833 (type locality,
Rio Janeiro; Antilles; Montevideo).

179 Upeneus taeniopterus Cuvier

Upeneus taeniopterus Cuvier, Hist. Nat. Poiss., vol. 3, April 1829, p. 451. Tringiemale, Ceylon.

Upeneoides taeniopterus Bleeker, Verhandel. Batavia. Genootsch. (Nat. Ich. Bengal), vol. 25, 1853, p. 34 (reference). $\frac{1}{21}$ Day, Fishes of India, pt. 1, 1875, p. 122 (type); Fauna British India, Fishes, vol. 2, 1889, p. 27. $\frac{1}{21}$ Steindachner, Denkschr. Akad. Wiss. Wien, math.-naturwiss. Classe, vol. 70, 1901, p. 487 (Honolulu). $\frac{1}{21}$ Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 227 (copied Day).

Depth $4\frac{3}{4}$ in total; head $4\frac{3}{4}$. Eye $4\frac{1}{2}$ in head, $1\frac{2}{3}$ in snout, $1\frac{1}{2}$ in interorbital; barbels reach $\frac{1}{3}$ in eye; teeth villiform in jaws, on vomer and palate; interorbital flat; opercular

Coryphaena dolphyx^m ^{Valenciennes} Cuvier, Hist. nat. Poiss., vol. 9, p. 305, 1833 (type locality, the Antilles).

Coryphaena virgata ^{Valenciennes} Cuvier, Hist. nat. Poiss., vol. 9, p. 308, 1833 (type locality, Martinique).

Coryphaena argyurus^r Cuvier, Hist. nat. Poiss., vol. 9, p. 314, 1833 (type locality, Sea of Coromandel; Gulf of Bengal).

— Bleeker, Verh. Batavia. Genoot. (nat. Ichth. Bengal), vol. 25, p. 46, 1853 (reference).

Coryphaena vlamingii ^{Valenciennes} Cuvier, Hist. nat. Poiss., vol. 9, p. 315, 1833 (type locality, East Indies) (on Vlaming).

Lumpus siculus ^{Valenciennes} Cuvier, Hist. nat. Poiss., vol. 9, p. 323, 1833 (type locality, Sicily).
Coryphaena sicculus Swanson, Nat. Hist. Animal., vol. 2, p. 252, 1839 (reference).

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6 examples. Sandakan Bay, Borneo,
Dutch East Indies. March 2, 1908.

Length 60 to 90 mm. Entire under surface
of body more or less sulphury yellow.

20235. Sandakan market. March 2,
1908. Length 113 mm.

53067 U. S. N. M. Cavite, Luzon. G. A.
Living. Length 84 to 91 mm. 2 examples.
Type.

56138 U. S. N. M. Bacu. Bureau of
Fisheries (no. 3201). Length 131 mm.

As Upeneoides sundaicus.

Coryphaena nortoniana Lowe,
Proc. Zool. Soc. London, (1839) p. 80,
(type locality, Madeira).

Coryphaena socialis F. D. Bennett,
Whaling Voy., p. 274, 1840 (type
locality, N. 27° Pacific; Equator in
166° W.).

Coryphaena globiceps De Kay, New
York Fauna, Fishes, vol. 2, p. 132,
pl. 10, fig. 29, 1842 (type locality,
New York Harbor).

Coryphaena japonica Schlegel, Fauna
Japonica, Poiss., pts. 7-9, p. 120, pl.
64, 1845 (type locality, Bays of coast of
south west Japan).

— Bleeker, Verh. Batavia. Genoot.
(Nat. Ichth. Japan), vol. 25, p. 15, 1853
(reference).

Cuv 29

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Upeneus subvittatus (Schlegel)

Naullus subvittatus Schlegel, Fauna
japonica, Poiss., pts. 2-4, 1843, p. 30.
Japan.

Upeneus subvittatus Richardson, Ichth.
China Japan, 1846, p. 219 (seas of China).

L. Snyder, Proc. U. S. Nat. Mus., vol. 32,
1907, p. 101 (Wakanoura).

Upeneoides subvittatus Elera, Cat. Fauna
Filipinas, vol. 1, 1895, p. 479 (Manila Bay,
Luzon). Jordan and Snyder, Annot.
Zool. Japon., vol. 3, 1901, p. 83 (Nagasaki).

Coryphaena concolor Pey, len.
Ac. Espan. Hist. Nat. Madrid,
vol. 5, p. 134, 1876.

Ectenias brunneus Jordan and
Thompson, Mem. Carnegie Mus., vol. 6, no. 4,
p. 241, pl. 27, fig. 3, Sep. 1914 (type
locality, Mississippi; Sagami).

sides paler, below golden rosy. Dusky or violaceous dusky band, wide as pupil, from eye to caudal base medially, embracing lateral line at caudal peduncle. Iris yellowish. Barbels golden. Fins clear rosy. Soft dorsal with 5 longitudinal streaks. Upper caudal lobe with 4 or 5 oblique yellow bands, lower lobe edged behind violaceous. Length 181 mm. (Bleeker.)

East Indies. Reported by Károli from Sarangoon and Kobe, perhaps the latter record pertaining to Upeneus tragula? The present species known chiefly by its narrow dark median lateral band.

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Depth $4\frac{2}{5}$ to $4\frac{3}{5}$; head $4\frac{2}{5}$,
width $2\frac{1}{3}$ to $2\frac{1}{2}$, Snout 3 to $3\frac{1}{10}$ in
head from snout tip; eye $4\frac{1}{2}$ to 5,
 $1\frac{4}{5}$ to 2 in snout, 2 in interorbital;
maxillary reaches $\frac{1}{3}$ to $\frac{2}{5}$ in eye,
expansion 3 in eye, length $2\frac{1}{10}$
to $2\frac{1}{6}$ in head from snout tip;
interorbital $2\frac{4}{5}$ to $2\frac{7}{8}$, convexly
elevated. Gill rakers + 13,
lanceolate.

Scales minute, very numerous.
Lateral line complete, axial
along side.

D. 58 to 60, height $2\frac{7}{8}$ to 3
in total head length; A. 25 or 26,
height $3\frac{3}{5}$ to $3\frac{2}{3}$; caudal 4 to
 $4\frac{1}{8}$ in rest of fish, slender lobes
sharply pointed; least depth of
caudal peduncle 4 to $4\frac{1}{3}$; pectoral
in head

$1\frac{1}{2}$ to $1\frac{3}{5}$, rays II, 17; V, I, 5, fin
 $1\frac{1}{4}$ to $1\frac{2}{5}$ in head.

Back brown, lower half of body silvery white. Iris pale. Dorsal dark brown. Anal gray marginally, whitish basally. Caudal brownish. Sides below lateral line with some rather scattered and quite small dark brown spots. Pectoral olive or pale brownish. Ventral whitish basally, terminally blackish gray.

Red Sea, Zanzibar, South Africa, Madagascar, Seychelles, India, Ceylon, East Indies, China, Japan, New South Wales, Polynesia, Hawaii, Also widely distributed in the Atlantic. Said to reach 1500 mm.

U. S. N. M., No. 70727. Nagasaki,
Japan. Albatross Collection.
Length 378 to 442 mm. Two examples.

P. 4396.
Length 87 mm. D. 56.

D. 5561.

September 19, 1909.
Length 32 to 79 mm. Nine examples.

U. S. N. M., one example. Lat. $25^{\circ}10'N.$,
Long. $166^{\circ}20'W.$. November 3, 1907. Length
79 mm. D. 56.

51904 to 51906 A. N. S. P. Orion, Luzon.
May 11, 1923. Rev. Joseph Clemens. Purchased.
Length 110 to 142 mm. These and all
following are Upeneoides bensasi.

51907 A. N. S. P. Orion. May 11, 1923.
Rev. Joseph Clemens. Purchased. Length 77 mm.

52696 A. N. S. P. Orani, Luzon. April
28, 1923. Rev. Joseph Clemens. Purchased. Length 150 mm.

52697 A. N. S. P. Orion. April 28, 1923.
Rev. Joseph Clemens. Purchased. Length 93 mm.

52701 to 52706 A. N. S. P. Orion. May 11, 1923.
Rev. Joseph Clemens. Purchased. Length 90 to 164 mm.

52707 A. N. S. P. Orani. May 9, 1923.
Rev. Joseph Clemens. Purchased. Length 133 mm.

52708 A. N. S. P. Orion. May 11, 1923.
Rev. Joseph Clemens. Purchased. Length 132 mm.

Coryphaena equiseles Linnaeus

Coryphaena equiseles Linnaeus, Syst.
Nat. ~~Schth.~~, ed. 10, pt. 1, p. 261, 1758

(type locality, Pelagic in open sea);
ed. 12, pt. 1, p. 447, 1766. —

Bonnaterre, Tabl. Ichth., p. 59, 1788
(East Indies). — Gmelin, Syst.

Nat. Linnaeus, pt. 1, p. 1190, 1789
(copied).

— Fowler, Proc. Acad. Nat. Sci.
Philadelphia, p. 122, ~~1906~~ 1906 (July 26)
(between Cape Verde Islands and
Montevideo); Mem. Bishop Mus.,
vol. 10, p. 137, fig. 31, ^(young) 1928 (Easter
Island to Galapagos).

Depth 4; head $3\frac{2}{3}$. Snout $2\frac{1}{2}$ in head; eye $4\frac{1}{10}$, $1\frac{4}{5}$ in snout; maxillary reaches $\frac{1}{8}$ in eye, expansion $1\frac{2}{3}$ in eye, length $2\frac{1}{2}$ in head; barbel $1\frac{1}{8}$; teeth pluriserial, small, equal; interorbital moderately high; preopercle edge entire.

Scales 38 in lateral line; 3 above, 6 below, 19 predorsal to snout tip, 3 rows on cheek; preorbital scaled; front of soft dorsal and anal basally with small scales; caudal finely scaled over greater basal portion.

D. VIII - I, 9, second spine $1\frac{3}{5}$ in head, first ray $2\frac{1}{8}$; A. I, 8, first ray $2\frac{1}{8}$; caudal 1, forked, lobes pointed; least depth of caudal peduncle $2\frac{2}{5}$; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{3}$.

Above violaceous or olivaceous,

Coryphaena equisetis Osbeck,
Reise Ost. Ind. China, p. 404, 1765
("der Grasse"). — Walbaum,
Artedi Pisc., vol. 3, p. 102, 1792
(copied).

— Günther, Cat. Fishes Brit. Mus.,
vol. 2, p. 407, 1860 (Atlantic); Journ.
Mus. Godeffroy, vol. 5, pt. 11, p. 147,
pl. 93, fig. A, 1876 (between Tahiti
and Hawaiian Islands).

Cave 179

Upeneus sundaicus (Bleeker) 1291

Upeneoides sundaicus Bleeker, Natuurk.
Tijdschr. Nederl. Indië, vol. 8, 1855,
p. 411 (on Bleeker 1849).

$\frac{1}{m}$ Günther, Cat. Fishes Brit. Mus., vol.
1, 1859, p. 399 (compiled). $\frac{1}{m}$ Steindachner,
Sitz. Ber. Akad. Wiss. Wien, math.-
naturwiss. Klasse, vol. 60, pt. 1, 1870, p.
560 (Singapore). $\frac{1}{m}$ Károli, Termész.
Füzetek, Budapest, vol. 5, 1881, p. 156
(Sarangoon, Kobe).

Upenoides sundaicus Herre and Montalban,
Philippine Journ. Sci., vol. 36, no. 1, May
1928, p. 98 (part). (Error.)

Upeneus sundaicus Bleeker, Verhandel.
Kon. Akad. Wetensch. Amsterdam, vol. 15,
no. 3, 1875, p. 10 (Java, Madura, Sumatra,
Nias, Singapore, Banka, Flores, Buru);
Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl.
(4) 394, fig. 2.1

— Kendall and Radcliffe, Mem.
Mus. Comp. Zool., vol. 25, no. 3, p. 101,
April 1912 (lat. $13^{\circ}03'S.$, long. $112^{\circ}44.9'$
W.; lat. $2^{\circ}18.5'S.$, long. $90^{\circ}2.6'W.$;
lat. $14^{\circ}15'S.$, long. $115^{\circ}13'W.$; lat. $7^{\circ}15'$
N., long. $82^{\circ}8'W.$).

Genus Heamia Smith and Radcliffe
Heamia Smith and Radcliffe, Proc. U. S. Nat.
 Mus., vol. 41, 1912, p. 441. Type Heamia
octospina Smith and Radcliffe, orthotypic.

Body deep, compressed. Head large.
 Maxillary long, reaches beyond eye.
 Bands of small villiform teeth in
 jaws, few on vomer, none on palatines
 and no distinct canines. Preopercle ridge
 and edge entire. Lower gill rakers 11.
 Scales ctenoid, 21 in lateral line to
 caudal base. Lateral line complete.
 Dorsal spines united basally at
 intersection, spines 8 and rayed fin
 with spine and 9 rays. Anal with 2
 spines and 8 rays. Caudal rounded.
 Pectoral long.

Coryphaena hippurus var. equisetes
Schneider, Syst. Ichth. Bloch,
p. 295, 1801 (copied).

Coryphaena hippurus equisetes
Seraniyagala, Ceylon Journ. Sci.,
vol. 18, pt. 1, p. 59, text fig. 6, Dec.
23, 1933 (Gulifalu Island,
Maldives).

Heamia octospina Smith and Radcliffe.

Heamia octospina Smith and Radcliffe,
Proc. U. S. Nat. Mus., vol. 41, 1912, p. 441,
pl. 36, fig. 2. Rasa Island, Palawan.

Lacépède, Hist. nat. ⁶⁸⁰

Coryphaena aurata ~~Rafinesque~~
Pisces, vol. 3, pp. 172, 183, fig. 10,
~~Car. nov. Animal. Sicil., p. 33,~~
fig. 2, 1832 (on type locality) (on Plumier).
4810

Valenciennes

Coryphaena azorea Cuvier, Hist.
Nat. Poiss., vol. 9, p. 306, 1833 (type
locality, 50 leagues west of Azores).

Valenciennes

Coryphaena lessonae Cuvier, Hist.
Nat. Poiss., vol. 9, p. 306, 1833 (type
locality, lat. $23^{\circ} 22' S$, long. $37^{\circ} 5' W$,
near Rio Janeiro).

Valenciennes

Lamprugus neapolitanus Cuvier,
Hist. Nat. Poiss., vol. 9, p. 325, 1833
(type locality, Naples).
Coryphaena neapolitana Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 408, 1860, (copied).
Lamprugus punctulatus Cuvier, Hist.

Valenciennes

Nat. Poiss., vol. 9, p. 327, 1833
(type locality, Equatorial Atlantic).
Coryphaena punctulata Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 408, 1860, (copied).
Coryphaena flavo Cocco,

Coryphaena socialis F. D. Bennett,
Narrat. Whaling Voyages, vol. 2, p. 274,
1840 (lat. $27^{\circ} N$, long. $156^{\circ} W$ [near
Laysan]).

76639 U.S.N.M. Takao, Formosa.

Dr. F. Baker. Length 78 to 81 mm. 3 examples.

76641 U.S.N.M. Takao. Dr. F. Baker.

Length 68 to 103 mm. 17 examples.

76643 U.S.N.M. Takao. Dr. F. Baker.

Length 66 mm.

Sarda immaculata Gray, Cat.
Fish. Gronow, p. 120, 1854
(type locality, "Mare Indico").

1289

Also spinous and soft dorsal each
with 2 or 3 dusky longitudinal
bands.

56436 U.S.N.M. Tokyo. Albatross
Collection. Length 102 to 155 mm. 2 examples.

57691 U.S.N.M. Japan. P. L. Jouy.
Length 128 to 180 mm. 4 examples. As
Upeneoides taeniopterus.

59672 U.S.N.M. Kochi. Dr. H. M. Smith.
Length 110 mm.

59673 U.S.N.M. Kochi. Dr. H. M. Smith.
Length 132 mm.

59674 U.S.N.M. Matsushima Bay.
Dr. H. M. Smith. Length 77 mm.

71355 U.S.N.M. Kagoshima. Albatross
Collection. Length 169 mm.

71356 U.S.N.M. Shimizu. Albatross
Collection 1906. Length 88 to 116 mm. 8 examples.

71838 U.S.N.M. Naha, Okinawa, Riu
Kin. Albatross Collection 1906. Length 132 mm.

Depth $3\frac{9}{10}$; head $4\frac{1}{2}$. Snout $3\frac{1}{10}$
 in head; eye $4\frac{1}{2}$, $1\frac{1}{2}$ in snout,
 $1\frac{1}{2}$ in supraorbital part of head;
 maxillary reaches $\frac{1}{3}$ in eye;
 length $2\frac{1}{3}$ in head, end exposed;
 interorbital rather low, ^{top of opercle wide as orbit.} Gill
 rakers 10, ^{palatines and tongue,}
 dentition feeble, cardiform, recurved on jaw, vomer, ^{outer enlarged row in jaws;}
 scales small cycloid, not
 markedly elongate or enlarged
 along base of dorsal. Transversely
 before bend of lateral line 24
 above, 40 below; transversely
 above anal origin 30 above, 33
 below.

D. V, 50, origin over hind
 edge of orbit, continuous; A. II, 24,
 origin below 33rd dorsal ray;
 pectoral $1\frac{9}{10}$ in head; vent rays
 18; ventral rays I, 5, fin $1\frac{2}{3}$ in
 head.

Slate blue, with numerous small black
 spots, fins dark blue, with thin light edge to anal.
 Length 460 mm. (Seranigala.)
 Maldives, Polynesia, Laysan. Also in the Atlantic.